POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)

SW-846 Method 8310

Table 1A. Summary of Holding Times and Preservation for Carbamate and Urea Pesticides by High Performance Liquid Chromatography

Analytical Parameter [1]	**Technical and Contract Holding Times**	**Preservation**
Polynuclear Aromatic Hydrocarbons (PAHs)	Technical for Extraction: 7 days from collection; Contract for Extraction: 5 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4EC ±2EC; Store in TFE-fluorocarbon-sealed bottles away from the light
Polynuclear Aromatic Hydrocarbons (PAHs)	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4EC ±2EC; Store away from the light

[1] Individual target compounds are listed in Table 1B.

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.4.2 and 7.8.1 of SW-846 Method 8000A.

Report water sample results in concentration units of micrograms per liter (Fg/L). Report soil sample results on a dry-weight basis in micrograms per kilogram (Fg/kg).

For rounding results, adhere to the following rules:
a)If the number following those to be retained is less than 5, round down;
b)If the number following those to be retained is greater than 5, round up; or
c)If the number following the last digit to be retained is equal to 5, round down if the digit is even, or round up if the digit is odd.

All records of analysis and calculations must be legible and sufficient to recalculate all sample concentrations and QC results. Include an example calculation in the data package.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantiation Limits for SW-846 Method 8310

COMPOUND	CAS No.	CRQL Water µg/L	CRQL Soil µg/kg
Acenaphthene	83-32-9	2	1340
Acenaphthylene	208-96-8	2	1340
Anthracene	120-12-7	0.1	67
Benzo(a)anthracene	56-55-3	0.1	67
Benzo(a)pyrene	50-32-8	0.1	67
Benzo(b)fluoranthene	205-99-2	0.1	67
Benzo(g,h,i)perylene	191-24-2	0.1	67
Benzo(k)fluoranthene	207-08-9	0.1	67
Chrysene	218-01-9	0.1	67
Dibenzo(a,h)anthracene	53-70-3	0.1	67
Fluoranthene	206-44-0	0.1	67
Fluorene	86-73-7	2	1340
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	67
Naphthalene	91-20-3	2	1340
Phenanthrene	85-01-8	0.1	67
Pyrene	129-00-0	0.1	67

Table 2. Summary of Calibration Procedures for Polynuclear Aromatic Hydrocarbons by SW-846 Method 8310

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs #20%	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL	Beginning of each day, after every 10 samples, and end of run	%D between CF of CCV and avg CFs from ICAL #15%	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV
Retention time evaluation forCCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio $5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL and and continuing CAL standards must contain all target analytes listed in Table 1B.

[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

Table 3. Summary of Internal Quality Control Procedures for Polynuclear Aromatic Hydrocarbons by SW-846 Method 8310

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per Batch or SDG [a] (1 per 20 samples minimum)	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate [b]	Every standard, sample, and method blank at 10 times CRQL	65-125% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries
Matrix Sike and Matrix Spike Duplicate (MS/MSD) [c]	One MS/MSD set per batch or SDG (1 MS/MSD set per 20 samples minimum)	75-125% of expected value; #30 RPD between MS and MSD	1. Report in case narrative
QC Check Solution	One per Batch or SDG	See Table 3 of SW-846 Method 8310	1. Repeat preparation and analysis of QC check solution.
Cleanup Standard (midpoint concentration)	When column cleanup is used	>85% Recovery	1. Investigate problem, determine cause, and document. 2. Do not analyze samples until cleanup standard is compliant.

[a] SDG - Sample Delivery Group - each case of field samples received; or each 20 field samples within a case; or each 14 calendar day period during which field samples in a case are received.

[b] The compound decafluorobiphenyl is recommended.

[c] MS/MSD spike should contain a minimum of three PAH compounds chosen from the compound list in Table 1B.

Dilute and re-analyze samples with one or more analytes at concentrations exceeding the range of the calibration curve. Results for such re-analyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.